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BULLETIN No. 55

GOVERNMENT OF THE PROVINCE OF SASKATCHEWAN
DEPARTMENT OF AGRICULTURE

GARDENING
IN
SASKATCHEWAN



BY

W. W. THOMSON, B.S.A.

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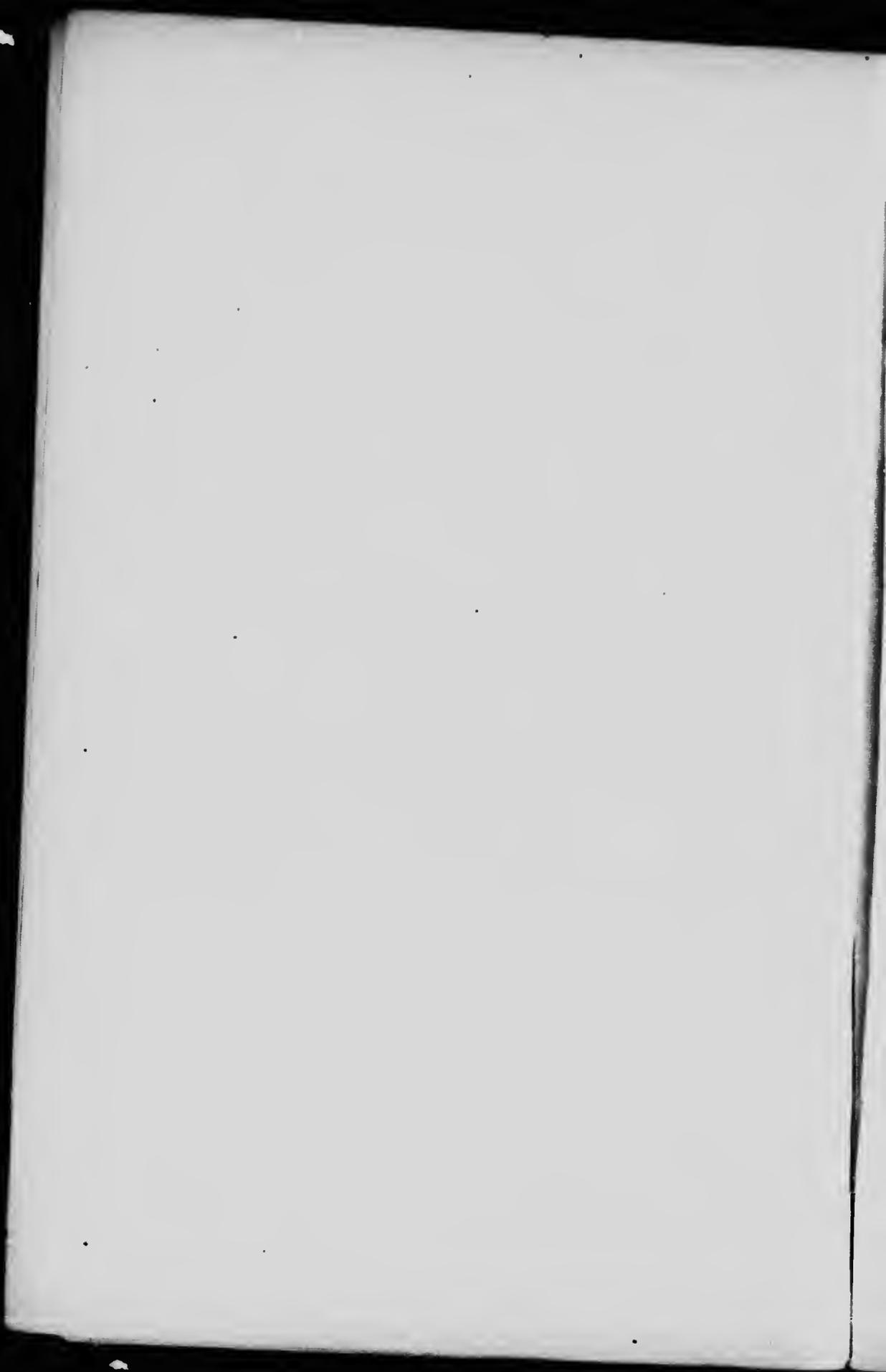
PREFACE AND ACKNOWLEDGMENTS.

REGINA, *October 31, 1917.*

There is little or nothing in this bulletin that is new or original. Its only intention is to present, in a concise and easily accessible form, detailed information relating to the production of garden and fruit crops in Saskatchewan. It is felt that at the present time there is more need for a simple bulletin presenting, in popular language, facts in regard to this subject than for a more pretentious publication.

Information upon the subject has been drawn from several bulletins on gardening issued by the Agricultural Departments of the neighbouring Provinces, but acknowledgment is due in particular to the Superintendents of the Experimental Farms and Stations in Saskatchewan, from whose reports much valuable data has been obtained. We are indebted to the Steele Briggs Seed Company for the loan of cuts used to illustrate this bulletin.

W. W. THOMSON,
Director Co-operative Organisation.



Gardening in Saskatchewan

The Importance of the Garden

The time is now long past when farming in Saskatchewan could be considered as an experiment of uncertain outcome. The experience of the last three or four decades has demonstrated that the province is without a rival in the realm of cereal production. The live stock and dairy industries are also becoming well established and it is generally recognised that this is destined to develop into one of the world's greatest centres of agricultural production. The economic future of the province is assured, but as yet sufficient attention has not been given to those smaller details of the home surroundings, which can add so much of beauty, interest, comfort and contentment. We have so far been too much inclined to order our activities with a view only to the immediate financial returns and to relegate to the future all plans for the building of permanent homes.

In this connection it is regrettable that so few of our people have realised the value of the Kitchen Garden and its inherent possibilities under our conditions. Nothing will add more to the comfort of the home and the beauty of its surroundings than a properly planned and well tilled garden. Good food is an important factor in the life of every home, fresh fruit and vegetables are a necessity and with proper care and attention they can here be grown in great variety and abundance. The quantity of fruit and vegetables that can be grown on a given area will surprise the uninitiated. A plot of the small fruits, properly tended, will produce as much fruit as a good-sized family can consume during the entire year and a well planned plot on a city lot will add much to the bill of fare.

The supplying of a wholesome and diversified menu and the financial saving resulting from this home production are by no means the only advantages to be derived. It has always been recognised that the effort of planning and conducting gardens has an ennobling influence. The overcoming of the incidental difficulties acts as an intellectual stimulus and the possibilities of artistic and aesthetic arrangement in a home where fruit, flowers and vegetables are grown and appreciated should be greater than when the landscape is a long stretch of monotony, the door yard decorations wanting and the pleasures of the table restricted to the contents of tin cans.

That small fruits and vegetables can be successfully grown in all parts of this province has been amply proven, both by the work of the Federal Experimental Farms and by enterprising settlers who have paid special attention to this line of work. In many cases, in addition to supplying the family requirements, the garden can be made a source of considerable revenue if the farm is situated in such a position that its produce can be readily marketed in a neighbouring town or

ticularly at the present time when every effort is being made to increase and conserve the food supply of the nation, it seems opportune to draw the attention of the public to the possibilities in the way of producing small fruit and garden truck, and if this bulletin serves to awaken an interest in these matters and leads to increased production, it will have largely accomplished its object.

SIZE AND LOCATION.

The size of the garden should be at least sufficient to supply the home with small fruits and vegetables for the entire year. An average farm family will generally require the products from about one-half acre of garden truck, and in this province an equal quantity of land should be under summer-fallow in preparation for the following year. On the average farm, it is therefore suggested that land to the area of about an acre should be set aside for garden purposes.

Having decided upon the size of the garden, its location should next be given careful attention. As much of the produce of the garden is taken direct to the kitchen, a location convenient to the house should be chosen, if suitable soil can there be found. A deep rich vegetable loam gives the best results with most garden crops. A slightly sandy soil is preferable to heavy clay. Good drainage is essential, and a southern slope is desirable as it will favor early crops.

PROTECTION.

Protection from wind storms and also from animal depredations is one of the first requisites of a successful garden. This may be obtained temporarily by erecting a strong board fence around the garden plot, but for permanent protection good windbreaks should be planted and a wire fence will then suffice for protection from animals. Some rapid growing varieties of trees, such as the Cottonwood, Willow or Russian Poplar should be selected, and several rows of these trees should be planted on the west and north sides of the garden; two rows might be planted on the eastern side and the south might be left open. If an extensive windbreak is being planned, it will usually be found best to plant a single row of trees well to the west and another to the north of the general plantation. The space between this row and the main shelter belt will serve in winter as a snow trap, and can be used in summer for growing corn, roots, rape or other hoed crops. Without a snow trap, large quantities of snow will accumulate in the shelter belt and is likely to seriously injure the trees during the spring thaws. No vegetables or small fruits should be planted within thirty feet of a well established windbreak, on account of the fact that the roots of large trees will absorb practically all of the moisture in the soil for that distance from the windbreak.

PLAN.

No plan that will be universally acceptable can be suggested. The arrangement of the crops will, however, depend largely on the methods of tillage that are to be adopted. It is usually found desirable to em-

ploy horse cultivation wherever possible, and if this is done, the vegetable and other crops should be planted in long straight rows rather than in short rows which would entail much turning.

The permanent crops, such as small fruits, rhubarb, asparagus, etc., should be located together, so that they will not interfere with the cultivation of the rest of the garden.

As the conservation of moisture is an important point in growing vegetables and other crops in this province, it will be well to arrange the garden so that the rows of plants will run east and west. This arrangement will cause the plants to shade the ground and prevent evaporation of soil moisture more quickly and completely than if the rows ran north and south.

CULTIVATION.

As previously suggested the writer is of the opinion that the best results can be obtained with most garden crops, if they are planted on land which has been summer-fallowed during the previous season. Scarcity of moisture is always a limiting factor, and garden crops, because of their heavy growth of foliage and the large amount of unoccupied soil between the rows, always require more moisture than cereal crops. It would therefore seem advisable to have half of the garden plot under summer-fallow each year, so that one season's rains can be stored up for the next year's crop. The portion under summerfallow should be deeply plowed early in June and thereafter should receive frequent and thorough surface cultivation to keep down the weeds and to establish and maintain a dust blanket which will prevent the evaporation of soil moisture.

A good application of well rotted barnyard manure just previous to plowing the summerfallow will be found beneficial. It will loosen up the heavy soils and, besides increasing the supply of available plant food, will add water holding capacity to the lighter or sandy types. The use of sawdust or shavings for mulching purposes is not recommended as it is almost certain to produce an acid condition of soil. The use of commercial fertilizers is not considered necessary except in special cases where the soil is particularly deficient in some element essential to plant growth. Where a limited area, as on a city lot, renders impossible the summerfallowing system above suggested, a rotation should be adopted and barnyard manure applied annually to the portion, that season set aside for roots and tubers.

All garden crops require a thorough cultivation of the soil during the growing season. The frequent stirring of the surface soil with a hoe, rake or light garden cultivator will keep the soil in the fine physical condition necessary for the proper growth of all plants.

HOT BEDS.

For the successful production of cabbage, cauliflower, celery, tomatoes, pumpkins, squash and other plants which require a long grow-

ing period, it is necessary to make use of hot beds. The form of hot bed usually employed consists of an enclosure covered with sash and heated by fermenting stable manure. A very serviceable hot bed can be made by constructing a box five feet wide, three feet high in front, four feet high at the back and of any length desired. This should be placed in a well sheltered location, with the lower side to the south, and then filled to a depth of about two feet with well compacted horse manure containing sufficient quantity of straw or other litter to prevent it packing solid. The manure should be covered with five or six inches of good garden soil, and the top of the bed should be closed in with glass sash (storm window sash will do if regular hot bed sash are not available).

OPERATION OF HOT BEDS.

In Saskatchewan the hot bed should be prepared about the end of March. No seed should be sown until the temperature has become constant which will be in from three to five days after the bed has commenced to heat at which time the temperature should be about 55 to 60 degrees. Before seeding destroy all weed growth, then sow seeds in rows about five or six inches apart. Sow fairly thick and later thin out to allow plenty of room, as close planting will cause plants to grow tall and weakly. Sufficient head room is as important in the hot bed as is heat.

While the plants are in the hot bed, care must be taken to supply plenty of water and to keep the temperature as uniform as possible. The morning is the best time to water the hot bed. Late watering reduces the temperature too much during the night. By watering in the morning the plants and soil get a chance to dry off and warm up during the heat of the day. Rain water slightly warmed should always be used. On bright days the bed is likely to become too hot owing to the action of the sun on the glass and it will be necessary to ventilate by slightly raising the sash on the side away from the wind. If moisture collects on the under side of the sash, ventilation is required. During cold nights it may be necessary to cover the sash with blankets, sacks, or other coverings to prevent the temperature falling too low. For tomatoes the temperature should range from 75 to 85 degrees during the day and may go down to 60 degrees at night. Cabbage, cauliflower and celery require temperature of 65 to 75 degrees during the day and may go as low as 40 at night without harming the plants. A good thermometer should be kept in the hot bed at all times, so that the temperature can be accurately known. When plants are from three to four weeks old additional ventilation should be given during the day to harden them.

COLD FRAMES.

To get the best results, plants should be transplanted from the hot bed to a cold frame, and left there for some time before being finally planted out in the garden. The cold frame is constructed in exactly the same way as the hot bed, except that no manure is provided for heating. This treatment makes the plants vigorous and stocky and better able to

withstand the outside conditions. While in the cold frame the plants require very little water.

The final transplanting can usually be done with safety about June 1. The plants should be set out in the evening or on a cloudy day, given plenty of water and provided with some shelter such as cans or shingles to protect the plants against wind and sun until the roots have become firmly established.

SELECTION OF CROPS AND SEEDS.

As previously stated, our soil and climatic conditions are such that practically all kinds of vegetables can be grown successfully in Saskatchewan. The seasons, however, are somewhat short and it is desirable that in choosing our garden crops care should be taken to select varieties which have proven particularly suited to our conditions. For this purpose we would recommend that the reports of the Experimental Farms be consulted. These institutions are maintained for the purpose of testing out the different varieties of crop and reporting on their suitability, and it is seldom advisable for a farmer to experiment with untried varieties, at least, on any large scale. The names of many of the most suitable varieties are given herein.

In purchasing seeds, it is usually best to patronise western seed houses. Most of these companies have been in operation in Western Canada for several years and are conversant with the requirements of the country. They handle seeds especially selected for their suitability to western conditions, and in most cases greater satisfaction will be obtained by ordering from them than by sending to distant firms who are not in touch with local conditions. As a precaution, test all seeds to make certain of their germinating power before planting.

As a result of the war in Europe, it has become exceedingly difficult to secure satisfactory supplies of many kinds of vegetable seed, and consequently many people are considering the advisability of growing their own seed as far as possible. Undoubtedly most crops become more suitable to a given section if grown in that locality for a number of years. The plant adapts itself to the local peculiarity of soil and climate and it would therefore seem desirable that more attention should be paid to the question of using home grown seeds for garden purposes. Where the seeds can be properly matured, there is every reason to believe that they will give at least equal, if not greater satisfaction, than imported seed. Persons who plan to grow vegetable seeds are advised to obtain a copy of bulletin No. 22, entitled "Growing field roots, vegetable and flower seeds in Canada," which may be had free on request, from the Publications Branch, Department of Agriculture, Ottawa.

SOWING.

The hardy vegetables should be sown as soon as the soil is fairly warm and moist, and the more tender varieties as soon as all danger from frost is past. The surface soil should be well raked to remove clods

and lumps and then packed down with a garden roller before the seed is sown. No definite rule as to depth and quantity of seed can be laid down as different quantities and depths will be required with different kinds of seed, but in every case the seeds should be sown in straight rows and all of the seed of any variety should be sown at a uniform depth. Generally speaking, in heavy or moist soils, seeds should not be planted as deeply as in the lighter sandy soils. If there is any danger that the seed used is not fully up to the standard in germinating power it is best to sow fairly thick and later thin out to the required distances. The thinning out should be done while the plants are still small so as not to check the growth of those which are left.



Cultivator Hoe



Satisfactory type of Garden Drill



Combination Drill and Wheel Hoe

Wherever possible, either a hand or a horse drawn drill should be used for seeding. Several types of these implements can be obtained from any seed house. For subsequent cultivation, the wheeled hoe and the light cultivator will perform the work much more quickly and economically than the use of the ordinary hoe and rake, although there are some places where the latter tools are indispensable.

STORAGE.

Storage facilities must be provided so that the garden crops may be preserved for winter use. Proper storage entails protection from frost, combined with provision for excluding light and maintaining a cool temperature. The atmosphere should be relatively moist to prevent the vegetables from wilting through evaporation, but wet or stagnant air is likely to produce decay. Particular attention must be paid to ventilation, as heating is a natural result of the accumulation of much fresh vegetable matter. Frost destroys the flavor of almost all vegetables, but the lower the temperature can be maintained without freezing, the better

the vegetables will keep. Roots, such as carrots, parsnips, turnips, etc., keep well if packed in moist sand in an ordinary cellar, if they are not too near the heating apparatus. Cabbage and cauliflower should be stored where the air will circulate freely about the heads, and thereby prevent decay. All decayed leaves should be removed before the plants are put into storage. Celery keeps well if the plants are placed upright in boxes containing sufficient moist sand to cover the roots, and stored in a cold cellar. Onions should be thoroughly dried in the sun and then stored in a cool room with good circulation of air.

Bulletin No. 9, Farm Building series, issued by the British Columbia Department of Lands, contains many practical suggestions in regard to the construction of root cellars and the storage of vegetable crops in bulk. Copies may be obtained free on request.

When storage in a fresh condition is impracticable, as with green peas, string beans and most fruit, resort may be had to canning, drying or pickling as a means of preserving such products. Special bulletins have been prepared on this phase of household art and can be obtained free on request to the Department of Agriculture, Regina.

VEGETABLES

In discussing the garden, special attention must naturally be given to the vegetable crops as they can here be grown in greater variety than fruits, and consequently occupy a much larger space and receive more attention than fruit crops. The following suggestions in regard to the production of vegetable crops are offered in the hope that they will be of service and encouragement to those of our people who are just commencing home gardening, and also that they will stimulate those who have already engaged in the business to produce a greater diversity of garden crops.

ASPARAGUS (*Perennial*)

This is a vegetable as yet little grown in Western Canada; but one which should have a place in every farm garden, on account of its earliness and the ease with which it can be grown. In Saskatchewan it is usually ready for use by the end of April and its season will last about a month. The plant can be grown from either seeds or from root divisions and when the bed is once established, it will bear from 15 to 20 years without being renewed. As previously mentioned the asparagus bed should be located along with the rhubarb and small fruits. If seed is sown it should be planted in rows about 3 feet apart and at the end of the first season the plot should be thinned to stand about 18 inches apart in the rows. It will take three years to get the bed into condition that the plants will stand cutting, and it is therefore generally better to use roots as plants from them will be ready for bearing in two years. Roots cost about \$1.75 per hundred and one hundred roots will make a bed sufficient for an average family.



Asparagus Sprouts

The land should be loosened to a depth of 10 to 12 inches and the roots set out in either the late fall or early spring. To allow of horse cultivation they should be set in rows $2\frac{1}{2}$ or 3 feet apart and from 16 to 18 inches in the row. In setting out the roots, the crowns should be covered to a depth of 4 or 5 inches. No shoots should be removed the first year the plants are set out, and the period of cutting in the second season should be short; but after that, with proper care the bed should last indefinitely. The young shoots which are thrown up in the spring are the parts of the plant which are used as a vegetable. These are cut off close to the ground when about 4 or 5 inches in length, care being taken not to injure the crown. During the bearing season, all shoots produced should be removed as soon as they reach the required size, as

the roots will cease to throw up shoots as soon as one is allowed to mature. When the shoots become tough or are no longer desired for use, the cutting should cease and the tops be allowed to grow during the summer. In the fall the tops should be cut, raked off and burned. The ground between the rows should be cultivated, and then the bed should be covered with 3 or 4 inches of well rotted barnyard manure, which should be dug into the bed the following spring.

Conovers Colossal and Barrs' Mammoth are the most satisfactory varieties.

BEANS (*Annual*)

Beans are one of the most common and satisfactory garden crops. They are easily injured by the frost and it is therefore advisable to make successive plantings in case those first planted should be killed. This practice will also secure a longer bearing season than could be obtained with only one planting. Beans thrive best in warm sandy soil, but may be grown on almost any kind of land. If sown in heavy clay, do not plant more than 1½ inches deep as such soil is apt to bake and render it difficult for the young plants to come evenly. On lighter soil sow about 2 inches deep. Dwarf or bush varieties should be sown in rows about 2½ feet apart, and thinned out to about 4 inches in the row. Pole or climbing beans should be planted in hills 3 or 4 feet apart, sowing 4 or 5 seeds to the hill, and must be supplied with a pole or other support. They require slightly richer soil than the dwarf varieties.

The following varieties of dwarf beans have been found very satisfactory: Improved Golden Wax, Early Six Weeks, Improved Refuge, Kidney Wax, Hudson Long Pod and Rustless Wax.

Indian Chief or Tall Black Wax and Early Golden Cluster Wax are pole varieties that will give good satisfaction. Lima beans may be successfully grown in many parts of the province, but the cold nights frequently interfere with their growth. They require particularly rich soil. Cultivation similar to that for pole beans.

BEETS (*Biennial*)

Beets may be grown on any good soil, but with sandy loam will give the best results. Sow soon as danger from frost is past. Plant about 1 inch deep in drills at 2 feet apart and later thin out to about 3 inches in the row. As one seed germinates slowly, some seed such as turnip, which will germinate quickly, may be mixed with the beets to show the location of the rows, so that cultivation may begin before the beets are up. The admixture should then, of course, be destroyed. To secure succession of crops, 2 or 3 plantings should be made at about 3 week intervals. Beets intended for winter storage should not be sown until about June 15th.

The round turnip shaped varieties such as Early Eclipse, the Egyptian Flat Round, and the Early Flat Turnip are very satisfactory for

immediate use. The longer varieties such as the Early Blood Red and the Convent Garden are usually better for winter use.

BRUSSELS SPROUTS (*Biennial*)

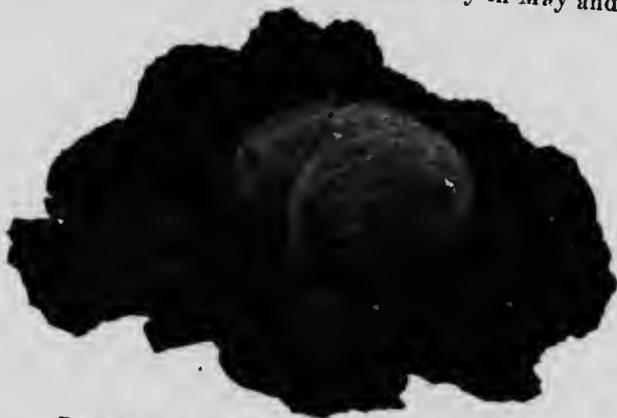
This is a vegetable which as yet is little known in Saskatchewan. It is closely related to cabbage, but instead of producing a single head, a large number of small heads, or "sprouts" as they are called, are formed in the axles of the leaves on the sides of the stem. When fully developed these "sprouts" are about 2 inches in diameter. As they develop the leaves should be broken off to give them room to grow except at the top when the heads will still be small.

The cultivation is similar to that herein recommended for cabbage. The plants can be stored for winter by placing upright in boxes with sand around the roots as advised for celery.

Brussels Sprouts are used in the same way as cabbage, but are considered to have a finer flavor. "Dwarf Improved" is the variety which has given the best results.

CABBAGE (*Biennial*)

Cabbage is one of the best known and most easily grown vegetables. For early use the plants should be started in a hot bed early in April, transplanted to a cold frame when about 2 inches high and finally set out in the garden in rows 30 inches apart and about 18 inches apart in the row, around May 24. For late crops satisfactory results are obtained by sowing the seed in rows in the garden early in May and later thin-



Desirable type of Cabbage for Winter use

ing out to about 18 inches in the row. Cabbage thrive best on a deep rich soil well supplied with moisture. Frequent cultivation will conserve the moisture and stimulate the plants to rapid growth.

The Early Jersey Wakefield, Copenhagen Market and Early Winingstadt are good varieties for summer use. They should be used as soon as they form solid heads as they will not keep well during hot

weather. For winter use the large Flat Drumhead, Danish Ballhead and Kildonan are suitable varieties. Of the Savoy or Wrinkly-leaved varieties, Chester Savoy and Savoy Drumhead are good sorts. Red varieties of cabbage are frequently grown for pickling purposes. Mammoth Red Rock is a popular variety among Western gardeners.

Slatted shelves in a well ventilated cellar furnish the best kind of winter storage. Good ventilation is essential and the temperature should be as low as possible without freezing.

CARROTS (*Biennial*)

Carrots are one of the most hardy vegetables. The seed may be sown in the open as soon as the soil warms up in the spring. Sow in deep loamy soil about 1 inch deep in rows 2 feet apart. Thinning need not be done until the carrots are about one quarter inch in diameter,



Desirable varieties of Carrots

when those removed will be fit for use in soups, etc. Thin to about 2 inches in the row.

There are short, intermediate and long varieties and all will do well. The Oxheart, Half long Scarlet Nantes and the Scarlet Intermediate are all good varieties. Field carrots for stock should be sown early in May in well worked land. Put the rows 2 feet apart and when

the plants are 3 or 4 inches high thin out to 5 inch distances in the rows.

Mammoth Short White and Large White Belgian are good varieties.

When stored in moist sand in a cool cellar carrots should keep perfectly for 6 or 8 months.

CAULIFLOWER (*Biennial*)

Cauliflower is another well known vegetable the cultivation of which is very similar to that required for cabbage. For early crop plants should be started in the hot-house but later crops can be sown in the open, about the middle of May. Cauliflower requires more moisture than cabbage. When heads commence to form the leaves should be tied up around the head to prevent sunburn. Early varieties should be planted at 2 week intervals so as to prolong their season.

For this purpose the Early Snowball and the Dwarf Erfurt have proven very suitable on the Experimental Farms. For winter use, the Danish Giant dry Weather, and Autumn Giant are good varieties. It is said that if cauliflowers have not matured before severe frosts may be expected, they may be lifted from the garden and placed upright in boxes in the cellar, the roots being covered with moist sand and the plants will continue to grow and good heads will be matured.

CELERY (*Biennial*)

Celery requires a deep, rich, moist soil containing plenty of well rotted barnyard manure. Frequent surface cultivation to conserve soil moisture is essential and artificial watering is frequently necessary. The seeds are very small and germinate slowly, consequently the plants should be started in a hot bed early in April, transplanted to a cold frame in about three weeks and set out in the garden about June 1.

Planting in trenches gives better results than on the level, the roots do not dry out so quickly, it is easier to water, and more convenient to blanch. The trench should be dug about 14 inches wide and 1½ feet deep. Six inches of well rotted manure should be put in the bottom of the trench, well compacted and covered with 6 inches of good garden soil in which the plants should be set at 6 inch intervals. Then as the plants grow the trench can be gradually filled up to bleach, i.e., bleach or whiten the celery. In blanching, the earth must be packed about the plants carefully or it will get into the hearts of the plants and cause them to rot.

For winter storage, reset the plants closely in boxes placed in a cool cellar and bed the roots in moist sand. The lower the temperature the better, so long as freezing is avoided.

Giant Pascal, White Plume and Evans' Triumph are the varieties recommended.

CITRON (*Annual*)

The citron is a species of watermelon, the rind of which is used for preserving. This plant requires a rich warm soil. Experience has shown

that the best method of planting for Saskatchewan is in rows placed 4 or 5 feet apart; plants set at about 4 inch intervals in the row. Plants may be started in the hot house and set out in the garden about June 10, or the seed may be sown in the open about June 1,

Owing to the absence of bees, citrons frequently fail to bear well, unless the blossoms are artificially fertilised. This, however, is easily done; simply transfer a little of the pollen from the staminate flower to the pistilate flower, the latter can be distinguished from the former by the presence of a small immature fruit immediately below the bloom.

Colorado Preserving and Red Seeded are two satisfactory varieties.

CORN (*Annual*)

Sweet corn can be successfully grown in most seasons if early maturing varieties are selected. A rich, sandy soil is preferred and frequent shallow surface tillage during the growing season is essential. Sow in rows 3 feet apart. As a protection against failure from spring frosts, three plantings should be made at intervals of a week, commencing about May 18.

White Squaw is one of the earliest and best yielding varieties. Golden Bantam and Improved Squaw produce somewhat larger cobs, but are a little later varieties.

For fodder purposes corn should be sown about May 24, on well worked summerfallow, the rows being planted 30 to 36 inches apart. Three pecks per acre is a good rate to sow and Northwestern Dent, Longfellow and Selected Leaming are suitable varieties.

CRESS (*Annual*)

Cress is grown for its leaves, which are used in salads for flavoring purposes, and also for garnishings. This plant does best on a cool, rich soil, but for home use can be successfully grown in any ordinary soil. Sow the seeds about $\frac{1}{2}$ inch deep in rows 2 feet apart as soon as the soil warms up in the spring. The leaves should be ready for use in about 6 weeks. Successive plantings should be made to prolong the season.

Extra Curled is one of the best known and most satisfactory varieties.

CUCUMBERS (*Annual*)

Cucumbers are very susceptible to early frosts and a rich sandy soil which will give rapid growth is desirable. There is much greater chance for success if the plants are started in a hot bed early in May, hardened in a cold frame and finally set out in the garden about June 10, although sowing in the open about June 1 will frequently give fair yields.

Cucumbers should be grown in hills about 4 feet apart and a small quantity of well rotted barnyard manure should be put in each hill. Frequent surface cultivation is required until the vines are well established. To keep the vines in good bearing condition the fruit should be removed as soon as it is large enough to use. For pickling the fruit should be removed while quite small.

Improved White Spine, Long Green, Davis Perfect and Chicago Pickling, are suitable varieties for general culture. Where the plants are to be grown under glass throughout, Rollinsons' Telegraph is the variety recommended.

HORSERADISH (*Perennial*)

Horseradish does best on a deep, rich soil which contains an abundance of moisture. The plant is reproduced by root divisions which can be purchased through any seed house at about 60 cents per dozen. Two dozen plants should be sufficient for an average family. The roots should be set in rows about 3 feet apart with the plants from 12 to 18 inches apart in the row. This plant requires no special cultivation except that the weeds must be kept down, and the soil must be kept fairly open around the plant.

KALE OR BORECOLE (*Biennial*)

Notwithstanding the fact that it is hardy and quite easily grown this vegetable is little known in Saskatchewan. In appearance the plant resembles a cabbage, except that it does not form a head, and its leaves are often used as a substitute for cabbage. The flavor of the leaves is improved by freezing.

The seed may be sown in the open early in May. Sow in rows about 2 feet apart and thin out to 15 inches apart in the rows. Green Curled Scotch Dwarf is a suitable variety.

KOHL-RABI (*Biennial*)

This is another hardy and easily grown vegetable which has not yet come into common use in Saskatchewan, but which will yet occupy an important place in many farm gardens. The plant belongs to the same class as the cabbage and cauliflower but its edible part consists of a turnip-like tuber produced just above the ground. The tubers should be used when they are from 2 to 3 inches in diameter, as they become tough, stringy and bitter if allowed to develop further. The tubers may

be prepared for the table in the same way as turnips, or may be served with a cream sauce. For an early crop, plants should be started in the hot bed in the same way as cabbage, but for later use, the seed may be sown in the open. Sow in rows 2 feet apart and thin out until the plants are 1 foot apart in the row.



Kohl Rabi

Early White Vienna is the most popular garden variety.

LEEKS (*Biennial*)

The leek belongs to the same family as the onion but does not form a true bulb and its flavor is considerably milder. Its fleshy stalks are used principally as a seasoning in soups.

This vegetable thrives best on a light, rich soil and, being somewhat tender, should be started in the hot bed early in April and transplanted to the garden about June 1. The plants should be set out in a trench about 1 foot wide and 4 inches deep, placing the plants about 6 inches apart in the row. Cultivate frequently during the growing season and when the plants are nearly mature fill in the trench and draw the soil up around them to blanch the fleshy stalks.

London Broad Flag and French Carentan are the varieties recommended.

LETTUCE (*Annual*)

Lettuce attains its best development in a well worked sandy soil that has been well manured. Unless the soil is well supplied with available plant food the leaves will not be crisp and tender. The seed should be sown about 1 inch deep in rows about 2 feet apart as early in the spring as the soil is warm, and successive plantings should be made at 10 day intervals to prolong the season.

Grand Rapids and Black Seeded Simpson are loose leafed varieties that are hardy. Nonpareil, Big Boston and Hanson are three of the best cabbage-head varieties. Cos-Trianion is one of the best of the celery-like variety. It produces long narrow leaves which, when tied up, bleach to a snowy whiteness and may be used in the same way as celery.



Cabbage headed type



Loose leaf type



Cos or Celery leaf type

ONIONS (Annual)

A rich well packed sandy soil is best suited for the production of onions. For the main crop the seed should be sown early in the spring $\frac{1}{2}$ an inch deep in rows 2 feet apart, and later the plants thinned out to about 2 inches in the row. Through the growing season, frequent surface cultivation is required to keep down weeds and stimulate the growth of the plants. In the fall it may be desired to hasten the maturity of the bulbs and this can be done by rolling an empty barrel over the rows and breaking down the tops. Bulbs should be pulled as soon as the tops are withered and dry. If possible they should be left on the ground to dry in the sun for 3 or 4 days after which they should be stored on slatted shelves in a storeroom where there is good circulation of air.

Large Red Wetherfield, Yellow Globe Danvers, Extra Early Red, and Silver Skin are all satisfactory varieties. The last mentioned is particularly suitable for pickling purposes.

Gardeners who wish a very early crop may sow a small quantity of seed in flats about the end of February, the flats should be placed in a green-house or in a good window. When about three or four inches high they should be transplanted into other flats, giving about three inches each way; gradually hardened and transplanted in the open as soon as weather and soil conditions permit. A good variety for this purpose is Prizetaker Yellow.



Onion sets



Multiplier Onions

should be ready for use in about 6 weeks.

Onion bulbs are also frequently planted for an early crop. There are three kinds of bulbs used, i.e., "Top Onions" or "Bulbets" that are produced on the top of the flower stock in place of flowers; "Sets" — which are small onions arrested in their growth, and the "Potato Onions" or "Multipliers," which are compound bulbs, each part of which is capable of forming a new bulb. Top Onions and Multipliers are distinct types, but sets are only partially grown bulbs of any common variety. The bulbs should be planted about 1 inch deep in rows 2 feet apart, as soon as the soil is warm. Pack the soil firmly about the bulbs and the onions

PARSLEY (*Biennial*)

Parsley does best in a cool, rich, moist soil, but can be grown on almost any well worked garden soil. The ground should be well prepared, the surface being made particularly fine. The seeds should only be covered about $\frac{1}{2}$ an inch, and are very slow to germinate unless kept moist. The seed may be sown as early as convenient in the spring in drills about 2 feet apart and the plants should later be thinned to stand about 3 inches apart in the row. For winter use, a few roots may be removed late in the fall and kept in the house in pots or window boxes, or the leaves may be picked from the stem when from 4 to 5 inches long, tied in small bunches, dried and stored to be used as seasoning. Parsley should be given good surface cultivation throughout the growing season.

Double Curled is one of the most popular varieties.

PARSNIPS (*Biennial*)

Parsnips require a cool, rich soil which has been well worked to a considerable depth. Seeds may be sown in the spring as early as the ground is fit. Sow about $\frac{1}{2}$ an inch deep in rows 2 feet apart and thin to 3 inches in the row. For winter storage, parsnips should be packed in moist sand and will then retain their quality and flavor. For spring use the plants may be left in the ground throughout the winter as their quality is not injured by freezing. It is not, however, advisable to use the roots after they have commenced to grow in spring.

Hollow Crown is one of the best varieties.

PEAS (*Annual*)

Garden peas are one of the most easily grown vegetables. The seeds may be planted in the open as soon as the soil warms up in the spring. A well manured light soil is preferable for early varieties, but peas thrive well on practically any garden soil that is properly tilled. Sow about 3 inches deep in rows 2 feet apart. Both early and late varieties should be sown to prolong the season, or, if desired, successive seedings may be made.

There are a large number of very satisfactory varieties. Among the earlier sorts, American Wonder, Gregory and Extra Early may be mentioned as particularly good varieties. Notts' Excelsior, Heroine, Dwarf Telephone and Strategem are also very satisfactory varieties although somewhat later in maturing.

PEPPERS (*Annual*)

These vegetables so highly esteemed for pickling, while somewhat tender, can yet be successfully grown in Saskatchewan in any average season. Seeds should be sown in the hot bed early in April; the young plants hardened in a cold frame and finally set out in the garden about June 1. Set in rows 3 feet apart, 15 to 18 inches apart in the row, and give thorough surface tillage throughout.

For Western use, Sweet Spanish and Cayenne are two of the more hardy varieties.

POTATOES (*Perennial*)

The potato occupies a leading position among our vegetable crops, being grown on practically every farm and garden in the province. The potato is a moisture loving plant and consequently yields best in deep rich loam which has been well manured and summerfallowed the preceding year. Early crops can, however, be grown on lighter soils and slightly sandy land usually produces the best quality of potatoes. Applications of fresh horse manure are apt to cause potato scab, hence the desirability of manuring the previous year. The plants are easily injured by frost and therefore the main crop should not be planted until danger of spring frost is past. From May 18 to 24 will usually be found the best dates to plant, but for early use a small patch might be put in as early as May 5 to 10.

For seeding, select firm unwilted potatoes that have not sprouted, and treat with formaline solution to prevent scab. The solution should be in the proportion of one pound of formaline to forty gallons of water and the potatoes should be immersed for about two hours. When the tubers have dried, cut into sets of about two ounces each, so that there will be two or three eyes in each set and plant in rows 30 inches apart, 14 inches apart in the row and about $3\frac{1}{2}$ inches deep. If the land is very dry the rows should be wider apart and the sets placed deeper in the ground. Pack the land well and then harrow to firm down. Cultivation with the harrows should be kept up until the plants are about 3 inches high, when inter-tillage with a scuffer should commence. It will generally be found that flat cultivation gives better yields than where the potatoes are hilled up, as the latter method exposes a larger soil surface to the action of the sun and wind, resulting in a greater loss of moisture by evaporation.

Potatoes should not be harvested until the tops have matured. If the tops are destroyed by frost, leave the tubers in the ground for a week or more that the skins may harden, and then lift them only when the soil is dry. Wet potatoes should never be placed in storage as they are almost certain to rot. For winter storage, place in a cellar or pit where the temperature will be between 32 and 40 degrees F. If a large quantity is stored, some arrangement should be made to provide proper ventilation and care should always be taken that no injured or diseased potatoes are placed in the bin.

The Early Ohio is generally considered to be the best of the early sorts. Rochester Rose, Everett, Irish Cobbler and Vic's Extra Early are medium early sorts, while Carmen No. 1, Gold Coin, Wee MacGregor, Table Talk and Empire State are among the best of the late varieties.

PUMPKIN (*Annual*)

The pumpkin is another vegetable that is very susceptible to frost injury and should therefore be started in the hot bed. Sow the seed early in April, transplant into flower pots, or berry boxes, about May 15, and place in the cold frame to harden until around June 10, when the plants should be lifted, the pot or box removed and the plant

set out in the garden with as little disturbance of the roots as possible. Select a rich, moist sandy loam and set the plants in rows about 6 feet apart on the square. Cultivate well to keep down weeds and to retain moisture. If the fruit does not set readily fertilise by hand as described for citrons. In lifting, handle carefully to avoid bruising, do not remove the stalk and store in a cool, well ventilated cellar.

Connecticut Field, Large Yellow Field and Japanese Pic are suitable varieties.

RADISH (*Annual*)

This crop gives the best results when sown on light rich soil. It is easy to grow and the seeds of the spring varieties may be sown in the open as soon as the soil is moderately warm. Sow about $\frac{1}{2}$ an inch deep in rows 18 inches apart. In about 6 weeks the plants should be ready for use. For a constant supply successive plantings should be made at about 2 week intervals. Each planting should be used as soon as the plants attain edible size as they lose their crispness and flavour if allowed to remain long in the ground.



Winter Radish

Early Scarlet Turnip, White Tipped Scarlet Gem and French Breakfast are good spring varieties. For summer use, Early Long Scarlet and White Icicle are very satisfactory.

Winter Radish have not, as yet, received in Saskatchewan, the attention they deserve. The plants are easily grown and will make a welcome addition to our winter vegetables. They should be sown about the middle of June in rows 3 feet apart. Thin to 4 inches in the row and cultivate like turnips. When lifted in the fall the tops should be removed and roots stored in a cool cellar.

Mammoth White, Rose or Scarlet China and Long Black Spanish are popular winter varieties.

RHUBARB (*Perennial*)

This hardy perennial yields a large return for a small outlay of time and labour, and should have a place in every Saskatchewan garden. It thrives well in all parts of the province, if given a deep, rich, well drained soil.

The plants may be grown either from seeds or from root divisions, but for practical purposes the latter is the most satisfactory method of propagation for early results. Where roots are not available, a five cent packet of seed will give a large number of plants which will be ready for use the third season. Root stalks can be obtained from western seed houses at a cost of about \$2.00 per dozen, and one dozen good plants should supply an average family. The roots should be set out in the spring in a row with 4 foot distances between the plants, and planted to such a depth that the surface soil will nicely cover the root crown. During the first year none of the leaves should be removed from the plant

as it is essential that the roots should make a good growth and become well established. In the fall roots should be mulched with a good coating of rotted manure which should be dug in around the plants the following spring. During the second spring and summer the leaves may be used freely, but the mulching and digging should be repeated every fall and spring.

Barrels or boxes placed over the crowns in the spring will hasten the growth. Care should be taken to prevent the plants forming seed.

Victoria Tobolsk and Strawberry are varieties especially suited to the West.

SALSIFY OR OYSTER PLANT (*Biennial*)

This vegetable is little known in the west, although deserving of considerable attention. It is a deep rooted vegetable similar to parsnips and requires a deep, rich, loamy soil to give the best results. The seeds should be sown in the open as soon as the soil is moderately warm. Sow about 1½ inches deep in rows 2 feet apart, and later thin the plants to



Salsify

about 5 inch distances in the row. Frequent surface cultivation throughout the growing period is beneficial. In the fall the roots should be dug and stored in the cellar in moist sand.

Mammoth Sandwich Island and Long White are both satisfactory varieties.

Salsify may be used in the same manner as parsnips, or if boiled, coated with rolled crackers and fried in butter it has a pleasing oyster-like flavor.

SPINACH (*Annual*)

Spinach is grown for its crisp, tender leaves, which are used as greens. The plant does best in a well manured sandy loam. Sow about 1 inch deep in rows 18 inches apart. Plant the first seeding about April 15, and put in subsequent seedings at 2 week intervals until June 15. In gathering spinach, remove the entire plant, selecting the larger ones first and thus allowing the smaller ones room to develop.

Victoria, Bloomsdale, Savoy Leaved and Prickly or Fall are suitable varieties.

SQUASH (*Annual*)

Squash, like pumpkins, are very easily injured by frost and the method suggested for growing pumpkins should be applied to this crop. A sandy soil that has received a heavy application of well rotted manure is the most desirable. When set out, the plants should be placed about 5 feet apart on the square. Thorough cultivation should be given during the growing season to keep the surface soil fine and also to keep down weeds. Hand fertilising will probably be necessary, owing to the absence of bees and other pollen carrying insects. When removing the crop in the fall, care should be taken to avoid bruising and not to remove the stalk or stem end. Store the same as pumpkins.

Summer Crookneck, Hubbard and Boston Marrow are leading varieties.

SWISS CHARD OF SPINACH BEET (*Biennial*)

Swiss Chard

This is a species of beet grown for its large succulent leaves, which are used as greens early in the season and later for its broad, flat leaf stems, which are cut and served like asparagus or made into pickles. The soil and cultivation required are similar to those for other kinds of beets.

Curled Leafed, Silver Ribbed and White Silver are suitable varieties.

TOMATOES (*Annual*)

Tomatoes are one of our most popular vegetables, but it is seldom that they can be fully matured in the open unless the plants are protected at night after August 20. Being very susceptible to frost the plants should be started in the hot bed about April 1, hardened in a cold frame and set out in the garden about June 10. Good results are obtained by transplanting from the hot bed into small flower pots or paper drinking cups, which are set in the cold frame and from which the plants are subsequently lifted and set in the garden without disturbing the roots.

A well manured and well drained sandy loam is the best soil for Tomatoes. The plants should be set out in rows 3 feet apart, and 30 inches apart in the row. The young plants should be given protection from the wind and sun either with cans or shingle several days after transplanting. Thorough and frequent surface cultivation is desirable. Tomatoes usually mature earlier and give better results if the vines are trained. The plants should be pruned so that they produce, at

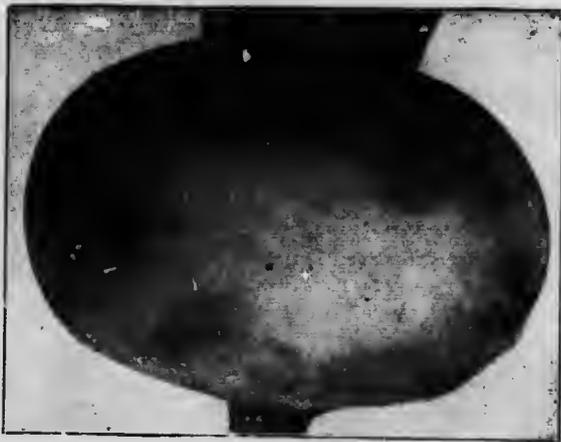
most, not more than three stalks and these should be tied up to a perpendicular pole. All side shoots which commence to grow in the axles of leaves should be pinched off. This prevents the excessive production of foliage and allows the sun to shine on the developing fruit, materially hastening its growth. When frost threatens, the larger green tomatoes may be removed from the vines and laid to ripen under glass, or on a sunny window-sill. The green tomatoes left on the vines when frost comes are suitable for pickling and other purposes.

Sparks Earliana is generally conceded to be the best variety for Saskatchewan conditions. Extra Early Atlantic, Early Ruby and Junc Pink are also good varieties.

TURNIPS (*Biennial*)

This is a common and easily grown vegetable which does well on any well worked garden soil. True turnips usually have flat roots, soft white flesh and green rough-hairy leaves, while Rutabagas or Swede Turnips have round elongated roots, dense yellow flesh and soft-hairy bluish leaves. For early garden purposes the true turnips are best as they mature early in the season, but for high quality and for winter keeping the rutabaga is much the best.

Early turnips may be sown as soon as the ground is warm enough to permit of growth. Sow one inch deep in rows 2 feet apart and thin to 6



Garden Turnip

inches in the row. Give good inter-tillage to keep space between rows free from weeds. Extra Early Milan, Early White Flat Dutch and Golden Ball are good early varieties.

Rutabagas or Swede turnips should not be sown until after June 1. Plant 1 inch deep in rows 30 to 36 inches apart and later thin to about 10 inches in the row. Give good surface cultivation throughout

the growing period. In the fall pull the plants, removing the tops and store in a cool well ventilated cellar.

Improved Purple Top is the leading variety. Canadian Gem, Hall's Purple Top and Champion Purple Top are also good varieties.

VEGETABLE MARROW (*Annual*)

The vegetable marrow is closely related to the pumpkin, both in species and habits of growth. Their soil requirements and methods of cultivation are identical, but vegetable marrows are not allowed to mature, being used while young and tender. Plants should be removed from the stem before the outer skin is hardened. Vegetable marrows are sometimes baked and served in the same way as sweet potatoes, or they may be boiled and mashed and served while hot with butter.

English Vegetable Marrow and Long White Bush are the leading varieties.

GARDEN FRUITS

Experience has shown that, given proper care and attention many kinds of small fruits can be successfully grown in Saskatchewan, and no garden should be considered complete until a fruit plantation has been established. Any well drained garden soil will be satisfactory, but a location slightly higher than the surrounding country is desirable as it will avoid many frosts which affect only the lower lying fields. Protection by good windbreak is essential for the best results. A site having a northern exposure is recommended as it will retard the blooming period in the spring and so save the blossoms from the late spring frosts, but this result can also be obtained by the use of heavy mulches, which are left around the roots of the fruit bearing trees and bushes until well into the spring.



One horse cultivator hoe for use among bush and tree fruits

The land on which fruit trees or bushes are to be planted should be well manured and deeply worked during the year prior to planting. After planting thorough surface cultivation is required to keep down weeds and grass and to prevent the loss of soil moisture by evaporation.

The best tool to use for this work is a one-horse cultivator with many teeth. If care is taken, in planting, to keep the rows straight in at least two directions, cross cultivation will be possible and little or no hand hoeing should be required. The soil should not be thrown up in ridges along the rows, but should be kept level and the cultivation should be shallow, as most garden fruits root near the surface. All kinds of fruiting plants respond to the application of manure, which should be used as a winter mulch and dug in around the roots the following spring.

SELECTION OF NURSERY STOCK.

In starting to raise fruit, the selection of good nursery stock is absolutely essential to success. The first requisite is that the variety selected must be hardy under our conditions. Young trees or shrubs, one or two years old, are usually the most vigorous. If possible secure stock that has been grown in a nearby nursery, as it will be better adapted to our climatic and soil conditions and there will also be less danger of loss of plants through drying out in transit. It is advisable to have the stocks delivered in the fall and heeled in in your own garden over winter. Ship all nursery stock by express and arrange to take delivery immediately it arrives at your local station. As soon as the plants are received, the roots should be thoroughly moistened and then placed in a shallow trench and covered with earth. The tops should later be covered with straw and earth before the cold weather commences.

TRANSPLANTING.

The trees and bushes should be set out in a permanent plantation during April. Great care should be taken to prevent the roots becoming dry during the process of transplanting. The plants should be set in the ground several inches deeper than they were when standing in the nursery row. The hole in which the roots are to be inserted should be large enough to give them plenty of room without crowding and the soil in the bottom should be loose and fine. With the plant in position, throw in a layer of the loose surface soil and tramp it down tightly about the roots, fill in another layer and repeat the tramping until the hole is full. A little water should be added after the first layer of earth has been tramped down, but further watering is not required when planting is done in the spring. It is seldom advisable to place manure around the roots as it is likely to cause them to dry out; it is a much better practice to have all of the soil in a fertile condition before starting the plantation. Under our conditions, when planting small trees, it is a good plan to drive a stout stick into the ground beside the tree and tie the tree to it. This will save it from much wind injury and will insure straighter growth.

The following suggestions in regard to the methods of handling some of the more hardy fruits will prove of service.

APPLES.

Considerable experimental work with apples has been done on the Experimental Farm at Indian Head and also by a few enterprising farmers throughout the province. The greatest success has been met with in the growing of Crabs, and the crossbred varieties that have been produced by the late Dr. Wm. Saunders. None of the standard varieties have yet given general satisfaction. The crossbred varieties produce fruit about the size of the ordinary crab and are particularly suitable for preserving and jelly making. These trees appear to be somewhat hardier than the crab varieties. Three or four of the crab and cross bred varieties should be given a place in the fruit plantation. The methods of planting and care required are similar to those herein recommended for the plum.

The crossbred varieties which have given the greatest satisfaction at Indian Head are the Charles, Columbia, Sylvia, Jewell, Prince, Pioneer, Tony and Eve.

The following varieties of crab apples have also been found hardy and generally satisfactory. Hyslop, Transcendent, Phillip, Lyman and Whiting.

The Wealthy, Hibernial and Charlamoff are standard varieties which might be tried out with advantage in exceptional favourable locations.

CURRENTS AND GOOSEBERRIES.

These are two of our hardiest fruits and do well with a comparatively small amount of care. They do best on a rich, sandy loam that is

well supplied with moisture. As the roots run near the surface the cultivation should never be deep after the bushes are planted.

Success or failure with these fruits depend largely on the pruning of the plants. The fruit is borne on the canes of the second and following seasons. Ten or twelve good canes will yield more and better fruit than a larger number. It is generally considered that canes should be removed as soon as they have once produced fruit and an equal number of good canes should be allowed to grow each year. In this way, the top will be renewed every three years, and the best quantity and quality of fruit will be insured. In selecting the new canes which are to be retained choose canes of erect growing habit and preserve an open topped bush. Gooseberries and currant plants will live for many years, but they generally yield best between their fourth and eighth years and the plantation should be renewed at least once in ten years.

New plantations are usually made with cuttings taken from the new shoots. Eight inch cuttings taken from healthy shoots early in August and immediately planted about 5 inches deep in well worked soil should develop a good root growth by fall. If it is desired to economise space, set the canes in a row about 12 inches apart and transplant in the second spring into their permanent location. Plants should be set about 6 feet apart on the square in the plantation.

Gooseberries are somewhat more tender than currants, and will frequently winterkill unless well mulched in the fall with straw or manure. Many growers' mulch the ground heavily between the rows of Currant and Gooseberry bushes with straw as soon as the bearing season is past, and do not remove the mulch until the following spring. The following are hardy and desirable varieties.

Black Currant:—Climax, Dominion, Magnus, Topsy and Saunders.

Red Currant:—Victoria Red, Red Dutch, Red Grape, Rankin's Red, Raby Castle and Cumberland Red.

White Currant:—White Grape, White Cherry and White Imperial.

Gooseberries:—Downing, Houghton and Smith's Improved.

PLUMS.

The plum is the tree fruit which has been found most satisfactory for general use throughout Saskatchewan. Native plums are found growing wild in various parts of the province and these when transplanted to the garden give very satisfactory yields. In addition to these a group of hybrid plums have been developed in the Dakotas and have proven quite hardy when tried out at the Indian Head Experimental Farm.

Plums do best on a heavy soil and require good protection from winds, as heavy storms at blossoming time cause serious loss of fruit if the trees are unprotected. The trees should be set at 10 foot intervals, and good surface cultivation is very important. The soil around the roots should be heavily mulched in the fall to prevent early blooming. Very little pruning is required except that the trees should be cut back

and encouraged to take on a bush form. Trees of two or more varieties should always be planted, as many varieties are self sterile and will not produce fruit unless their blossoms are fertilized with pollen from trees of another variety.

The following are the hybrid varieties that have given the best results at Indian Head: Assiniboine, Tapa, Hanska, Winnipeg and Huya. The De Soto, Opata and Terry are additional varieties that have given good results in private plantations.

The Compass Cherry, which is a hybrid produced by crossing the native Sand Cherry with the American Plum, is also perfectly hardy, but on account of its lateness in ripening it is not highly recommended.

RASPBERRIES.

Red Raspberries are another standard fruit in the west. They do best on a rich sandy loam that is moist and well drained. Two methods of planting are in common use. In the first the plants are set out in hills, 2 or 3 plants to the hill—hills about 6 feet apart, and the other method is to set the plants in rows about 6 feet apart and the plants 2 feet apart in the row. The former method is, however, considered to be much the better, as it permits of cross cultivation, making it easier to keep down the suckers and to keep the surface soil fine so as to retain the moisture so much needed to this crop. Good strong one-year-old plants should be used for planting and should be set into the ground about an inch deeper than they were before. The tops should be cut off a few inches above the ground to force the development of new shoots, which will bear fruit the second season. The fruit is borne on canes of the preceding year's growth. The number of fruit bearing canes should not exceed 5 or 6 per plant and these should be cut back in the spring to a height of about 3 feet to force the plant to develop lateral shoots on which the fruit is borne. After the canes have borne fruit they should be cut off and destroyed as they will not bear fruit again. Only a sufficient number of suckers should be allowed to develop to replace the canes destroyed and to provide new stalks for transplanting.

Frequent shallow surface cultivation is desirable during the growing season but must be stopped when the fruit is ripening or the berries will be shaken off. After the fruit has been picked, a good mulch of well rotted manure should be placed between the rows and with the approach of winter the canes should be bent over and covered with 3 or 4 inches of soil for winter protection. If left covered until early in the following May, they are not liable to come into bloom until after danger of frost is over.

The following are hardy and satisfactory varieties: Herbert, Cuthbert, Marlborough, Loudon and Oheta.

Black and Purple cane varieties are not so hardy as are the Red, but where there is exceptional good shelter a few of these sorts should be planted. The soil requirements and methods of handling for these varieties are similar to those of the red varieties. The most hardy varieties are the Gregg and Olden.

STRAWBERRIES.

Little attention has yet been given to strawberry culture in Saskatchewan but enough has been done to demonstrate that the crop can be grown successfully under our average conditions, and when this is realised many families will certainly set out plantations. Given good wind break protection any good moist soil will produce strawberries, but the ideal location is on a sandy loam, which has a northern exposure. The soil should be well manured and deeply summerfallowed during the year prior to the spring when the plants are to be set out. Order healthy one-year-old plants, having roots about 3 inches long and set them out as soon as received, in rows 4 feet apart, plants 2 feet apart in the row. Use a spade to open the soil, spread the roots out well and set the plant in such a depth that the crown will be just level with the surface. Pack the soil well around the roots and if the season is dry, water occasionally until the roots are well established. Frequent shallow surface cultivation is required during the summer. All blossoms which appear during the first season should be removed and not more than four runners per plant should be allowed to take root. These runner plants should be kept in the row and spaced so that the moisture will be evenly divided. In the fall mulch the bed with 2 or 3 inches of clean straw to protect the plants and hold snow. Leave the mulch in place until the plants show signs of life the following spring and then rake it carefully off the rows. The straw may be left between the rows to keep the fruit clean, until after it is picked.

Strawberries produce their best crop in the year after that in which the plantation is set out. Some growers advocate setting out a new bed each year and plowing up the old one as soon as it has borne fruit, but this is not necessary, as one or two more good crops can be produced by renovating the bed. This can be done by removing the tops immediately after the last picking and then plowing between the rows leaving only 5 or 6 inches on each side of the row unturned. Apply a good coating of well rotted manure and disc the patch until the surface is leveled down. Growth will soon start and enough new plants will be produced to make a good stand. These plants should, of course, be again protected with a mulch on the approach of winter. This treatment can be repeated the following year, but after the third crop the bed should be plowed up. A new bed should be started in the spring of the year in which the old bed is to be destroyed, using one-year-old plants from the old bed as planting stock.

In selecting varieties of strawberries it must be remembered that some varieties produce no pollen and consequently will not bear fruit unless planted along with pollen bearing sorts.

The Senator Dunlop is considered the best variety for western planting, being very hardy and producing perfect flowers. Warfield and Beder Wood are also hardy and perfect flowered varieties.

NATIVE FRUITS.

There are a number of native fruits sometimes used for culinary purposes, which are deserving of attention, and which, if transplanted

to the garden will give excellent results. Among these may be mentioned the Native Red Cherry, the Choke Cherry, the Saskatoon Berry, the High Bush Cranberry and the Native Wild Currants and Gooseberries.

The Native Red Cherry, now commonly found in many bluffs and coulees and so highly prized on account of the exceptional quality of the jelly which can be made from its fruit, will well repay transplanting. Young trees should be lifted in the fall, heeled in for winter and planted in the spring in the manner previously described when discussing plums. The trees attain considerable size and should be planted at, at least, 10 foot intervals. Thorough cultivation during the growing period and winter mulching to protect the roots and prevent early blossoming are necessary. This tree is particularly subject to Black Knot; the branches should be examined carefully and all affected parts should be pruned off early each spring.

The Choke Cherry and Saskatoon Berry will thrive well on any well worked moist soil, and might be cultivated to advantage in sections where they are not now growing wild. The fruit of the former possesses a peculiarly astringent quality, but this can be overcome in preserving and very tasty jam and jelly produced.

The High Bush Cranberry (*Viburnum Opulus*) is frequently grown for ornamental purposes, while its fruit can be utilised for jelly and jam making. The plant is native to moist and heavy land, but under good cultivation will thrive well in any garden soil. If grown for fruit purposes only, the plants should be set in rows about 6 feet apart with the plants 4 feet apart in the row, and should receive the same cultivation and mulching as previously advised for currants.

The Native Wild Currants and Gooseberries, if handled as described when dealing with the cultivated varieties of the same species, will greatly improve in quality and are naturally well adapted to our climatic conditions.

INSECT PESTS

Insect pests have not as yet proven a serious menace to gardening in Saskatchewan. In the older settled sections of the province, some injurious insects have, however, appeared in small numbers, and this bulletin would not be complete without a brief reference to this subject. The following suggestions are therefore offered for the control of the more common insect pests.

POTATO BEETLE.

The larvae of this insect, which is fortunately not common in Saskatchewan, causes much damage by eating the leaves of the potato vines, thereby retarding the growth of the plant and sometimes killing it. Having biting mouth parts, they can be controlled by the use of stomach poisons. Affected plants should be heavily sprayed two or three times during the growing season with paris green solution. Take one pound of paris green, mix with water to make a thin paste, stir thoroughly and add twenty gallons of water. If spraying apparatus is not available apply with a watering can.

CUT WORM.

The cut worms, which cause so much damage to garden crops, do their work during the night and spend the day in hiding just under the ground. The worms are from 1 to 2 inches long, having mottled backs and are lighter coloured below. They may be controlled by digging about the injured plants, finding the worms and killing them, or better still, by sprinkling a poisoned bran mash close to the plants in the evening. Poison mash may be made as follows:

Wheat bran.....10 pounds
 Molasses, or sugar..... 1 cup
 Paris green..... $\frac{1}{4}$ pound
 Water to make a thick mash.

WHITE GRUB.

This is a yellowish white grub about one-half inch in length, which causes much damage to onions and other garden crops. It is often confused with the cut worm, but cannot, however, be destroyed with the poison mash. The only remedy is to plough late in the fall exposing the grub to the birds and to the action of the winter frosts.

CABBAGE WORM.

This is the green worm about 1 inch in length which feeds in the cabbage head. These worms may be destroyed by spraying the cabbages with paris green solution until within three weeks of the time when heads are to be used. The poison mash, recommended for the cut worms, when sprinkled on the head gives good results.

PLANT LICE.

These are the small green insects with or without wings frequently found on house plants and occasionally on garden crops. They destroy the plant by sucking its sap. The remedy is to spray the plants with kerosene emulsion or soap solution. These kill the insects by stopping up the openings in their skin through which they breathe.

Formula for kerosene emulsion:

Common washing soap..... $\frac{1}{4}$ pound (shaved fine)
 Water $\frac{1}{2}$ gallon
 Coal oil..... 1 gallon

Dissolve soap in hot water, then add the coal oil. Stir until it thickens. To spray, use one part of this mixture to nine of water.

WIRE WORM.

These are slender, brown, shiny worms, often found working on the roots of crops growing on newly broken land. They are extremely hard to control. Late backsetting, or fall ploughing, which will expose the worms to the winter frosts is the best remedy. Owing to the fact that the worms do not attack a flax crop, it can be successfully grown in wire worm infected area.

For more comprehensive and detailed information, in regard to insects injurious to fruits and vegetables, refer to bulletin entitled "Common Garden Insects and Their Control," prepared by the Dominion Entomologist, copies of which can be obtained free on application to the Publications Branch, Department of Agriculture, Ottawa.

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